



December 16, 2022

New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

**Re: Closure Request Addendum
Grama 8817 JV-P Federal Com #2H
Incident Number nOY1704029358
Lea County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of BTA Oil Producers, LLC (BTA), has prepared this *Closure Request Addendum* to document additional assessment, delineation, and soil sampling activities performed at the Grama 8817 JV-P Federal Com #2H (Site). The purpose of the additional Site assessment, delineation, and soil sampling activities was to address a denial of the *Closure Request* submitted on behalf of BTA on January, 23, 2017 (and subsequently on November 20, 2021). Based on the delineation activities completed following the denial and laboratory analytical results from the soil sampling events, BTA is submitting this *Closure Request Addendum*, describing follow-up remediation that has occurred and requesting closure for Incident Number nOY1704029358.

SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit M, Section 16, Township 22 South, Range 34 East, in Lea County, New Mexico (32.385229° N, 103.481830° W) and is associated with oil and gas exploration and production operations on State Land.

On January 11, 2017, a fine mist of oil was released from the top of the separator, resulting in the release of approximately 5 barrels (bbls) of oil onto pasture directly adjacent to the battery, with none recovered. BTA reported the release immediately to the New Mexico Oil Conservation Division (NMOCD) on January 11, 2017 and submitted a *Release Notification Form C-141* (Form C-141) on February 9, 2017. The release was assigned Incident Number nOY1704029358.

On January 12, 2017, a contractor was hired to oversee remediation of the release extent and confirm to impacts remained in place. A *Closure Request* was submitted January 23, 2017, detailing the remediation and bio-amendment application. NMOCD responded on September 15, 2022, denying the *Closure Request* for the following reasons:

- *Please include a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.*
- *The C-141 closure report submitted on 11/10/2021 states "The release is located on top of a historical pit area. Remediation activities will be addressed at time of pit reclamation." If the pit has been reclaimed, please provide a closure report including information regarding the*

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remediation of the release. If the pit has not been reclaimed and a deferral request needs to be submitted, page 5 of the C-141 must be completed. A deferral will only be approved if all conditions are met per 19.15.29 NMAC.

The following *Revised Closure Addendum* provides scaled diagrams showing significant Site receptors, Site infrastructure and boring locations and details remediation activities completed at the Site. In addition, a desktop search was conducted to confirm the presence or absence of a historical pit area mentioned in the original *Closure Report*. Results of the desktop are included below..

SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was characterized to assess the applicability of Table I, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC). Results from the characterization desktop review are presented on page 3 of the Form C-141, Site Assessment/Characterization. Potential site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well with depth to groundwater data is New Mexico Office of the State Engineer (NMOSE) well CP-00865 POD 1, located approximately 0.8 miles southwest of the Site. The groundwater well has a reported depth to groundwater of 605 feet bgs and a total depth of 885 feet. This depth to water measurement is consistent with regional data that indicates groundwater is greater than 100 feet bgs and is present between 180 feet and 824 feet bgs. All wells used for depth to water determination are depicted on Figure 1 and the referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is a playa lake, located approximately 22,634 feet northeast of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (low potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH)- gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- TPH: 2,500 mg/kg
- Chloride: 20,000 mg/kg

A reclamation requirement of 600 mg/kg chloride and 100 mg/kg TPH was applied to the top 4 feet of the pasture area that was impacted by the release, per NMAC 19.15.29.13.D (1) for the top 4 feet of areas that will be reclaimed following remediation.

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SITE ASSESSMENT ACTIVITIES AND ANALYTICAL RESULTS

Based on the time that has lapsed since the initial Closure Request was submitted (over five years), BTA tasked Ensolum to assess the historical release to determine if bio-remediation was effective at reducing hydrocarbon impacts to meet the Site Closure Criteria and reclamation requirements.

On October 06, 2022, Ensolum personnel were at the Site to evaluate the release extent based on information provided on the Form C-141 and visual observations. Three assessment soil samples (SS01 through SS03) were collected within the release extent and four assessment soil samples (SS04 through SS07) at a depth of approximately 0.5 feet bgs to assess shallow soil conditions in and around the historical release. The preliminary soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride utilizing Hach® chloride QuanTab® test strips. The soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2. Photographic documentation was completed during the Site visit and a photographic log is included in Appendix B.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported at or below 4 degrees Celsius (°C) under strict chain-of-custody procedures to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico, for analysis of the following chemicals of concern (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method SM4500.

Laboratory analytical results for preliminary soil samples SS01 through SS07, collected within the release extent, indicated all COC concentrations were compliant with the Closure Criteria; however, additional delineation activities were warranted.

DELINEATION ACTIVITIES AND ANALYTICAL RESULTS

On October 25, 2022, Ensolum personnel were at the Site to perform delineation activities. Three boreholes (BH01 through BH03) were advanced via hand-auger within the pasture release extent. Three discrete delineation soil sample was collected in each location at depth ranging from 1-foot to 5.5 feet bgs. Soil from the delineation samples was field screened for VOCs and chloride. The soil samples were handled and assessed in a similar manner described above. The boreholes were backfilled with soil removed. The delineation soil sample locations are depicted in Figure 2. A photographic log is included in Appendix B. Lithologic / Soil Sampling Logs are provided in Appendix C.

Laboratory analytical results for delineation soil samples BH01 through BH03, indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete analytical reports are included as Appendix D.

HISTORICAL PIT ASSESSMENT

Ensolum reviewed files on the NMOCD Permitting and Imaging online portals as well as an pertinent records BTA had for the Site. One closed loop system was permitted at the Site (1 @ 30-025-42808) and approved of by NMOCD in 2015. No other records of any current or historical reserve pits were found during the desktop search. It should be noted that BTA did not have any records of a reserve pit associated with this Site.

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Looking through historical imagery of the Site on Google Earth did identify disturbed soil north of the Site starting in 2005. As imagery was reviewed for years 2005, 2009, 2011, 2012, 2014, and 2017, Ensolum did not identify the presence of a reserve pit within the disturbed area. It appears the area was potentially graded for a future production well and/or battery to be constructed; however, it was never used and as such, the area appears to have been reclaimed.

Ensolum believes the previous consultant viewed the historical imagery and assumed it was a former reserve pit without any documentation. Based on the lack of documents and physical observations of a reserve pit north of the Site and in the vicinity of release associated with Incident Number nOY1704029358, it appears there was no historical reserve pit and the release should be addressed on its own as has been completed and described in the previous section.

CLOSURE REQUEST

Site assessment and delineation activities were conducted at the Site to assess the effectiveness of remedial actions, specifically the addition of bio-amendments to residual crude oil within the release extent, that addressed the January 2017 crude oil release. Laboratory analytical results for preliminary and delineation soil samples, collected from the pasture area, indicated all COC concentrations were compliant with the Site Closure Criteria and reclamation requirements. In addition, no evidence of the historical pit mentioned in the original *Closure Request* was observed during the delineation activities and no documentation of the historical pit could be found in NMOCD or BTA records. Based on the soil sample analytical results, no further remediation appears to be required.

Depth to groundwater has been estimated to be greater than 100 feet bgs and no other sensitive receptors were identified near the release extent. BTA believes these remedial actions are protective of human health, the environment, and groundwater. As such, BTA respectfully requests closure for Incident Number nOY1704029358. The Form C-141 is included as Appendix F.

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If you have any questions or comments, please contact Ms. Tacoma Morrissey at (337) 257-8307 or tmorrissey@ensolum.com.

Sincerely,
Ensolum, LLC



Hadlie Green
Staff Geologist



Tacoma Morrissey
Senior Geologist

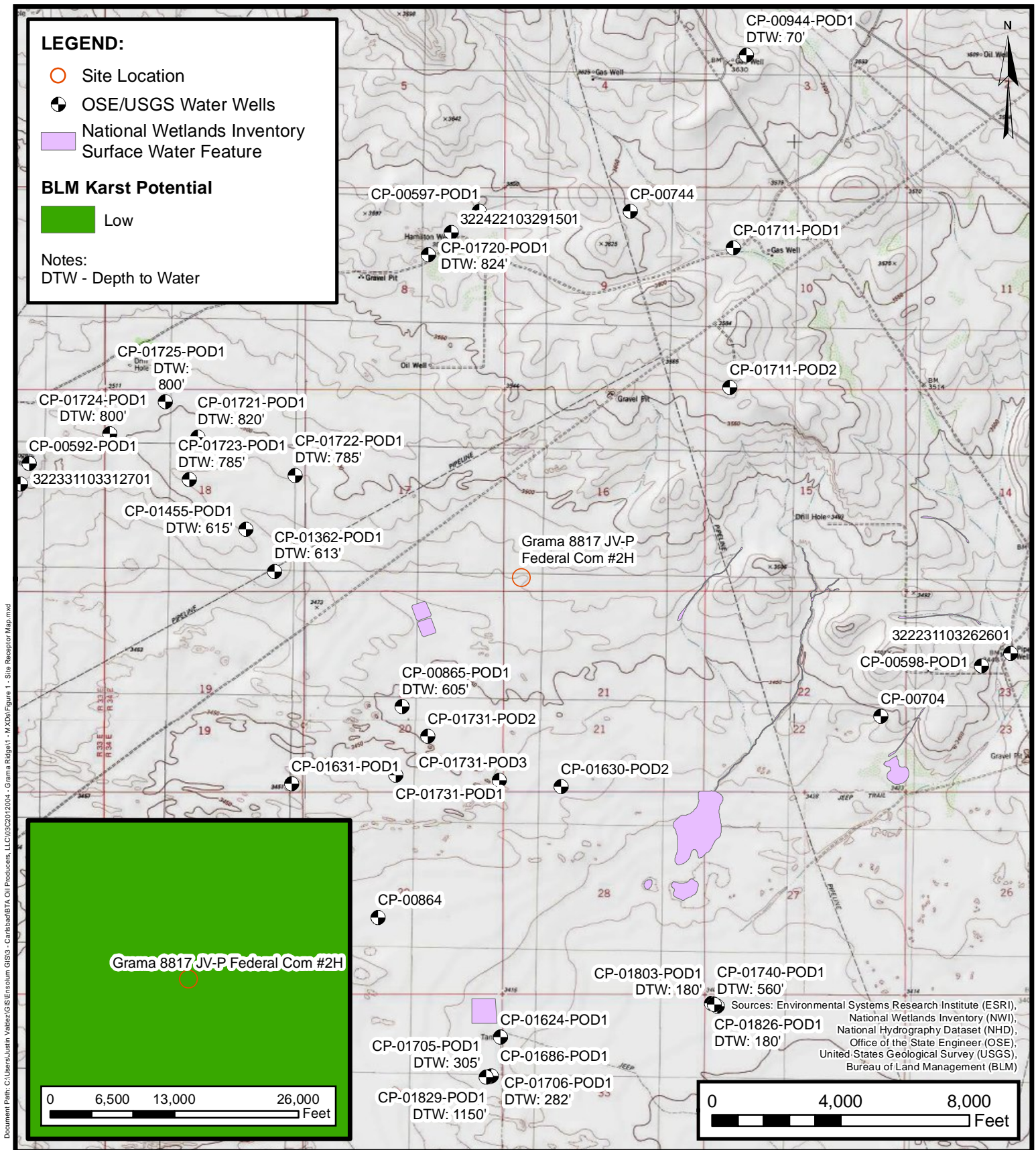
cc: Bob Hall, BTA Oil Producers, LLC
State Land Office

Appendices:

Figure 1	Site Receptor Map
Figure 2	Delineation Soil Sample Locations
Table 1	Soil Sample Analytical Results
Appendix A	Referenced Well Records
Appendix B	Photographic Log
Appendix C	Lithologic Soil Sampling Logs
Appendix D	Laboratory Analytical Reports & Chain-of-Custody Documentation
Appendix E	NMOCD Sample Notification
Appendix F	Final C-141



FIGURES

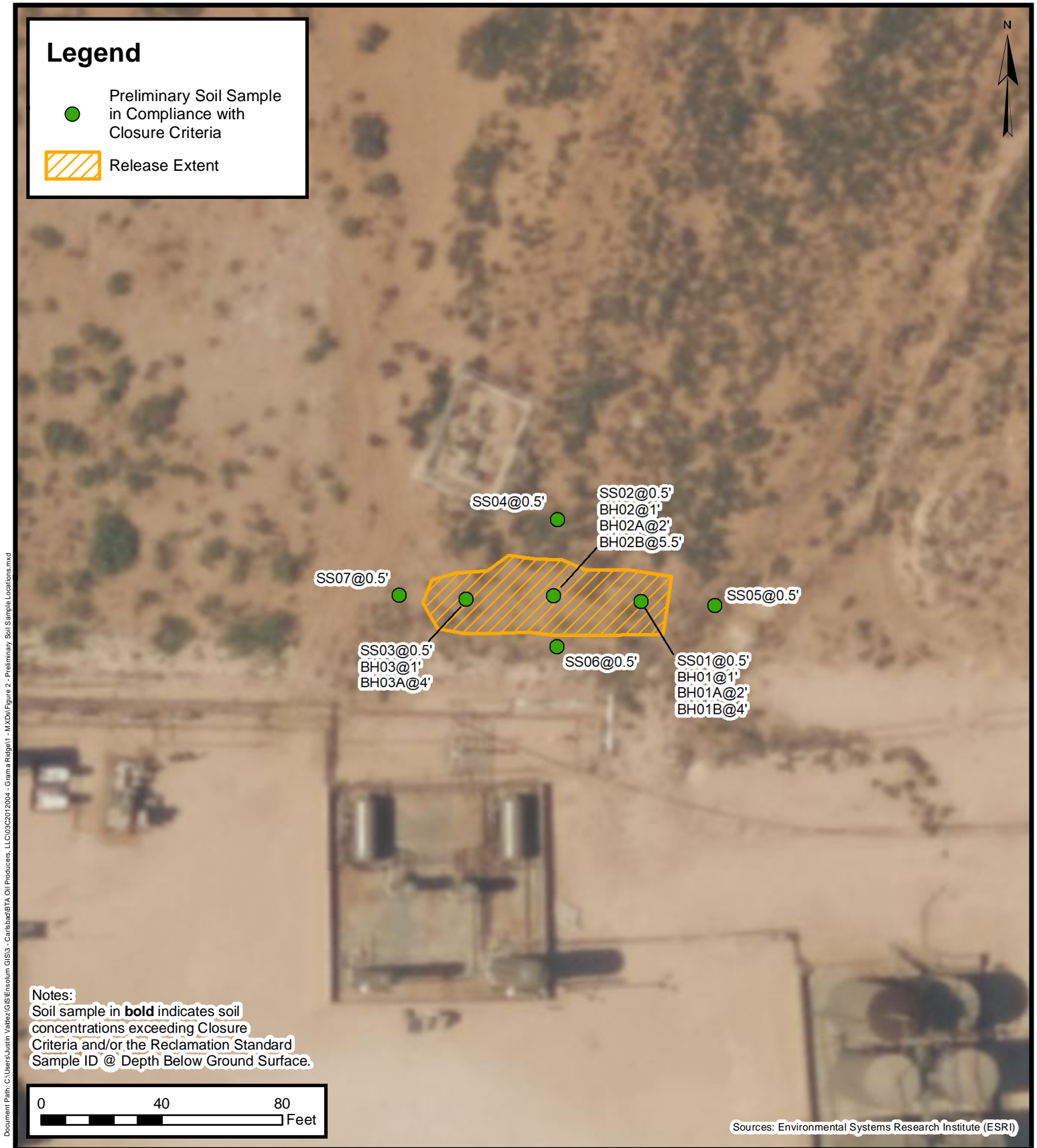


Site Receptor Map

BTA Oil Producers, LLC
Grama 8817 JV-P Federal Com #2H
nOY1704029358
Unit M, Sec 16, T22S, R34E
Lea County, New Mexico

FIGURE
1





Preliminary Soil Sample Locations
BTA Oil Producers, LLC
Grama 8817 JV-P Federal Com #2H
nOY1704029358
Unit M, Sec 16, T22S, R34E
Lea County, New Mexico

FIGURE
2



TABLES



TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
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 BTA Oil Producers, LLC
 Lea County, New Mexico

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table 1 Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	1,000	2,500	20,000
Delineation Soil Samples										
SS01	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
BH01	10/25/2022	1	<0.050	<0.300	<10.0	11.2	<10.0	11.2	11.2	16.0
BH01A	10/25/2022	2	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
BH01B	10/25/2022	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS02	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
BH02	10/25/2022	2	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
BH02A	10/25/2022	4	<0.050	<0.300	<10.0	23.9	<10.0	23.9	23.9	<16.0
BH02B	10/25/2022	5.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
SS03	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
BH03	10/25/2022	1	<0.25	<0.150	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
BH03A	10/25/2022	4	<0.25	<0.150	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS04	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS05	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS06	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS07	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0

Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

Concentrations in bold exceed the NMOCD Table 1 Closure Criteria or reclamation standard where applicable.

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon



APPENDIX A

Referenced Well Records



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4 Sec TwS Rng	X	Y
CP 00865	POD1	2 2 3 20 22S 34E	641845	3583118



Driller License: 421 **Driller Company:** GLENN'S WATER WELL SERVICE

Driller Name: GLENN, CLARK A."CORKY" (LD)

Drill Start Date: 08/22/1997	Drill Finish Date: 08/29/1997	Plug Date:
Log File Date: 09/04/1997	PCW Rev Date: 10/18/2013	Source: Shallow
Pump Type: SUBMER	Pipe Discharge Size: 2.875	Estimated Yield: 50 GPM
Casing Size: 6.63	Depth Well: 885 feet	Depth Water: 605 feet

Water Bearing Stratifications:	Top	Bottom	Description
	738	870	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	734	885

Meter Number: 800	Meter Make: SEAMETRICS
Meter Serial Number: 062018004760	Meter Multiplier: 1.0000
Number of Dials: 9	Meter Type: Diversion
Unit of Measure: Barrels 42 gal.	Return Flow Percent:
Usage Multiplier:	Reading Frequency: Quarterly

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount Online
08/27/1999	1999	12170	A	fm		0
09/27/1999	1999	18665	A	fm		1.993
07/10/2000	2000	23573	A	mb	Initial reading Trn# 184947	0
09/01/2000	2000	792	A	mb	Initial reading Trn# 189706	0
10/09/2000	2000	3703	A	mb	Final reading Trn# 189706	0.893
11/02/2000	2000	33323	A	mb	Final reading Trn# 184947	2.992
07/23/2001	2001	35004	A	jw		9.606
08/14/2001	2001	35550	A	jw		0.168
09/16/2003	2004	44365	A	RPT		0
02/13/2004	2004	54105	A	RPT		2.989
05/28/2013	2013	301812	A	RPT	Initial reading	0
10/07/2013	2013	494174	A	RPT		24.794
11/11/2013	2013	627789	A	RPT		17.222
01/01/2014	2014	775387	A	ap		1902.439
04/01/2014	2014	1150295	A	ap		4832.312
10/01/2014	2014	1395310	A	ap		3158.078
01/01/2015	2015	2252908	A	ap		11053.861
03/31/2015	2015	2496573	A	ap		3140.678
06/01/2015	2015	2602349	A	ap		1363.381
06/30/2015	2015	2632913	A	ap		393.949

07/28/2015	2015	2657713	A	ap	319.655
08/31/2015	2015	2675935	A	ap	234.869
09/30/2015	2015	2685784	A	ap	126.947
10/30/2015	2015	2777793	A	ap	1185.934
11/30/2015	2015	2813732	A	ap	463.230
04/30/2016	2015	2902402	A	ap	1142.897
06/01/2016	2016	2949111	A	ap	602.048
07/30/2016	2016	3039470	A	ap	1164.667
09/01/2016	2016	3112223	A	ap	937.737
09/30/2016	2016	3233850	A	ap	1567.690
10/31/2016	2016	3310726	A	ap	990.880
12/01/2016	2016	3400370	A	ap	1155.451
12/31/2016	2016	3504124	A	ap	1337.319
02/01/2017	2017	3505049	A	ap	11.923
03/02/2017	2017	3549664	A	ap	575.057
03/31/2017	2017	3670149	A	ap	1552.971
05/01/2017	2017	3799022	A	ap	1661.086
05/31/2017	2017	3857500	A	ap	753.742
07/31/2017	2017	3902575	A	ap	580.986
10/31/2017	2017	4063882	A	ap	2079.139
11/30/2017	2017	4191565	A	ap	1645.748
12/30/2017	2017	4326964	A	ap	1745.202
01/30/2018	2018	4423832	A	ap	1248.563
02/28/2018	2018	4511456	A	ap	1129.414
03/30/2018	2018	4547266	A	ap	461.567
04/30/2018	2018	4658071	A	ap	1428.202
06/01/2018	2018	4766177	A	ap	1393.414
06/29/2018	2018	4790998	A	ap	319.926
07/31/2018	2018	4790998	A	ap	0
08/13/2018	2018	4791140	A	ap	1.830
08/13/2018	2018	0	A	ap	0
08/30/2018	2018	73947	A	ap	953.127
09/30/2018	2018	201617	A	ap	1645.580
11/30/2018	2018	443361	A	ap	3115.917

**YTD Meter Amounts:		
Year	Amount	
1999	1.993	
2000	3.885	
2001	9.774	
2004	2.989	
2013	42.016	
2014	9892.829	
2015	19425.401	
2016	7755.792	
2017	10605.854	
2018	11697.540	
2019	0	
2020	0	

Meter Number:	806	Meter Make:	MASTER
Meter Serial Number:	1746627	Meter Multiplier:	100.0000

Number of Dials:	6	Meter Type:	Diversion
Unit of Measure:	Gallons	Return Flow Percent:	
Usage Multiplier:		Reading Frequency:	

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount Online
01/01/1999	1999	12165	A	fm		0
01/15/1999	1999	21665	A	fm		2.915

**YTD Meter Amounts:	Year	Amount
	1999	2.915

Meter Number:	807	Meter Make:	SEAMETRICS
Meter Serial Number:	10 200 191	Meter Multiplier:	1.0000
Number of Dials:	8	Meter Type:	Diversion
Unit of Measure:	Barrels 42 gal.	Return Flow Percent:	
Usage Multiplier:		Reading Frequency:	Monthly

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount Online
11/14/1999	1999	19858	A	fm		0
12/14/1999	1999	21411	A	fm		0.477
01/02/2019	2018	556195	A	RPT		0
02/01/2019	2019	604855	A	RPT		6.272
08/01/2019	2019	949138	A	RPT		44.376
09/01/2019	2019	1061141	A	RPT		14.436
09/30/2019	2019	1161966	A	RPT		12.996
10/31/2019	2019	1259879	A	RPT		12.620
11/30/2019	2019	1325382	A	RPT		8.443
12/31/2019	2019	1325382	A	RPT		0
02/01/2020	2020	1369756	A	RPT		5.720
03/01/2020	2020	1488098	A	RPT		15.253
04/01/2020	2020	1488098	A	RPT		0
05/01/2020	2020	1488098	A	RPT		0
06/01/2020	2020	1488098	A	RPT		0
08/01/2020	2020	1488098	A	RPT		0
08/01/2020	2020	0	A	RPT		0
09/01/2020	2020	154	A	RPT		0.020
10/01/2020	2020	154	A	RPT		0
11/01/2020	2020	26213	A	WEB		3.359 X
12/01/2020	2020	144137	A	WEB		15.200 X
01/01/2021	2020	168842	A	WEB		3.184 X
01/31/2021	2021	204704	A	ad		0
02/24/2021	2021	250418	A	ad		5.892
02/24/2021	2021	0	A	ad		0
02/28/2021	2021	479	A	ad		0.062
03/31/2021	2021	77494	A	ad		9.927
04/30/2021	2021	151907	A	ad		9.591
05/31/2021	2021	260155	A	ad		13.952
06/30/2021	2021	350984	A	ad		11.707

07/31/2021	2021	390794	A	ad	5.131
08/31/2021	2021	465926	A	ad	9.684
09/30/2021	2021	584055	A	ad	15.226
10/31/2021	2021	664994	A	ad	10.432
11/30/2021	2021	756770	A	ad	11.829
12/21/2021	2021	835364	A	ad	10.130
01/31/2022	2022	933170	A	ad	12.607
02/28/2022	2022	933713	A	ad	0.070
03/31/2022	2022	933713	A	ad	0
04/30/2022	2022	1158640	A	ad	28.992
06/01/2022	2022	1158640	A	ad	0
07/02/2022	2022	1158640	A	ad	0
08/01/2022	2022	1448406	A	ad	37.349
09/01/2022	2022	1448406	A	ad	0
10/01/2022	2022	1458546	A	WEB	1.307 X
11/01/2022	2022	1615601	A	WEB	20.243 X

x

**YTD Meter Amounts:	Year	Amount
	1999	0.477
	2018	0
	2019	99.143
	2020	42.736
	2021	113.563
	2022	100.568

x

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/11/22 8:54 AM

POINT OF DIVERSION SUMMARY



APPENDIX B

Photographic Log



Photographic Log

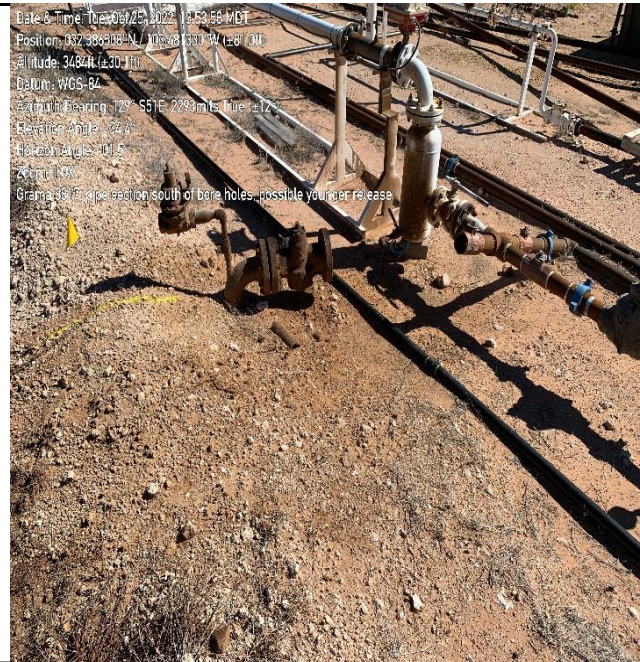
BTA Oil Producers, LLC.

Grama Ridge Federal #2H

Incident Number: nOY1704029358



Photograph 1
Date: 10-25-22
Description: Photo of lines approaching release facing Northwest.



Photograph 2
Date: 10-25-22
Description: Photo of the source of release facing Northwest.



Photograph 3
Date: 10-25-22
Description: Photo of BH02 at a depth of 4'.





Photograph 4
Date: 10-25-22
Description: Photo of BH03 at a depth of 4'.




APPENDIX C

Lithologic Soil Sampling Logs

								Sample Name: BH01		Date: 10-25-22	
								Site Name: Grama 8817 JV-P Federal Com #2H			
								Incident Number: nOY1704029358			
								Job Number: 03C2012004			
LITHOLOGIC / SOIL SAMPLING LOG								Logged By: C. Whitman		Method: Hand Auger	
Coordinates: : 32.38522, -103.48183								Hole Diameter: 4"		Total Depth: 4'	
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
N	<168	168	Y	BH01	@ 1'	1'	SP	Very fine-grained sand w/ clay & silt, odor present			
N	<168	145.6	N	BH01A	@ 2'	2'	SP	Very fine-grained sand w/ clay & silt, odor present			
N	<168	36.1	N	BH01B	@ 4'	4'	SP	Very fine-grained sand w/ clay & silt, odor present Hit refusal after 4'			
TD@4 ft bgs											

								Sample Name: BH02		Date: 10-25-22	
								Site Name: Grama 8817 JV-P Federal Com #2H			
								Incident Number: nOY1704029358			
								Job Number: 03C2012004			
LITHOLOGIC / SOIL SAMPLING LOG								Logged By: C. Whitman		Method: Hand Auger	
Coordinates : 32.38522, -103.48183								Hole Diameter: 4"		Total Depth: 5.5'	
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
N	<168	16.9	N	BH02	@ 2'	2'	SP	Very fine-grained sand w/ clay & silt. Odor present.			
N	<168	37.1	N	BH02A	@ 4'	4'	SP	Very fine-grained sand w/ clay & silt. Odor present.			
N	<168	22.1	N	BH02B	@ 5.5'	5.5'	SP	Very fine-grained sand w/ clay & silt. Odor present. Hit refusal after 5.5'.			
TD@5.5 ft bgs											

 ENSOLUM								Sample Name: BH03		Date: 10-25-22	
								Site Name: Grama 8817 JV-P Federal Com #2H			
								Incident Number: nOY1704029358			
								Job Number: 03C2012004			
LITHOLOGIC / SOIL SAMPLING LOG								Logged By: C. Whitman		Method: Hand Auger	
Coordinates: 32.38522, -103.48183								Hole Diameter: 4"		Total Depth: 4'	
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. No correction factors included.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
N	<168	2.1	N	BH03	@ 1'	1'	SP	Very fine-grained sand w/ clay & silt. No odor present.			
N	<168	4.5	N	BH03A	@ 4'	4'	SP	Very fine-grained sand w/ clay & silt. Odor present.			
TD @4 ft bgs											



APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 12, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: GRAMA 8817 JV-P-FEDERAL COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 10/07/22 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/07/2022	Sampling Date:	10/06/2022
Reported:	10/12/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Tamara Oldaker
Project Location:	BTA - NM		

Sample ID: SS 01 (H224725-01)

BTEx 8021B		mg/kg		Analyzed By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09	
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446	
Total BTEx	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	10/11/2022	ND	384	96.0	400	4.08		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/11/2022	ND	195	97.4	200	4.38	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	192	96.1	200	12.6	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 104 % 45.3-161

Surrogate: 1-Chlorooctadecane 126 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/07/2022	Sampling Date:	10/06/2022
Reported:	10/12/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Tamara Oldaker
Project Location:	BTA - NM		

Sample ID: SS 02 (H224725-02)

BTEx 8021B		mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09		
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403		
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492		
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446		
Total BTEx	<0.300	0.300	10/11/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/11/2022	ND	384	96.0	400	4.08		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/10/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/10/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/10/2022	ND					

Surrogate: 1-Chlorooctane 89.6 % 45.3-161

Surrogate: 1-Chlorooctadecane 97.0 % 46.3-178

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/07/2022	Sampling Date:	10/06/2022
Reported:	10/12/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Tamara Oldaker
Project Location:	BTA - NM		

Sample ID: SS 03 (H224725-03)

BTEx 8021B		mg/kg		Analyzed By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09	
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446	
Total BTEx	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/11/2022	ND	384	96.0	400	4.08		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/10/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/10/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/10/2022	ND					

Surrogate: 1-Chlorooctane 94.0 % 45.3-161

Surrogate: 1-Chlorooctadecane 102 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

BILL TO

ANALYSIS REQUEST

† Cardinal cannot accept verbal changes. Please email changes to celej.keene@cardinallabsnm.com



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 12, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: GRAMA JVP FED. COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 10/07/22 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/07/2022
Reported: 10/12/2022
Project Name: GRAMA JVP FED. COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/06/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: SS 04 (H224726-01)

BTEx 8021B		mg/kg		Analyzed By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09	
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446	
Total BTEX	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	10/11/2022	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/10/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/10/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/10/2022	ND					

Surrogate: 1-Chlorooctane 81.5 % 45.3-161

Surrogate: 1-Chlorooctadecane 87.2 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/07/2022
Reported: 10/12/2022
Project Name: GRAMA JVP FED. COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/06/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: SS 05 (H224726-02)

BTEx 8021B		mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09		
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403		
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492		
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446		
Total BTEx	<0.300	0.300	10/11/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/11/2022	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/11/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 97.9 % 45.3-161

Surrogate: 1-Chlorooctadecane 105 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/07/2022	Sampling Date:	10/06/2022
Reported:	10/12/2022	Sampling Type:	Soil
Project Name:	GRAMA JVP FED. COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Tamara Oldaker
Project Location:	BTA - NM		

Sample ID: SS 06 (H224726-03)

BTEx 8021B		mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09		
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403		
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492		
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446		
Total BTEx	<0.300	0.300	10/11/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	10/11/2022	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/11/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 97.9 % 45.3-161

Surrogate: 1-Chlorooctadecane 102 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/07/2022
Reported: 10/12/2022
Project Name: GRAMA JVP FED. COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/06/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: SS 07 (H224726-04)

BTEX 8021B		mg/kg		Analyzed By: JH/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	1.09		
Toluene*	<0.050	0.050	10/11/2022	ND	2.01	100	2.00	0.403		
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.96	97.9	2.00	0.492		
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.99	99.8	6.00	0.0446		
Total BTEX	<0.300	0.300	10/11/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 107 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/11/2022	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/11/2022	ND	202	101	200	1.79	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	207	103	200	1.05	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 97.9 % 45.3-161

Surrogate: 1-Chlorooctadecane 102 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 31, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: GRAMA 8817 JV-P-FEDERAL COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 10/26/22 14:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive, with the first name "Celey" and last name "Keene" clearly distinguishable.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/26/2022	Sampling Date:	10/25/2022
Reported:	10/31/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Shalyn Rodriguez
Project Location:	BTA - NM		

Sample ID: BH 01 1' (H225033-01)

BTX 8021B			mg/kg		Analyzed By: JH				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25	
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90	
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13	
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33	
Total BTX	<0.300	0.300	10/31/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.6 % 69.9-140

Chloride, SM4500Cl-B			mg/kg		Analyzed By: AC				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	10/28/2022	ND	432	108	400	0.00	

TPH 8015M			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	11.2	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 80.6 % 45.3-161

Surrogate: 1-Chlorooctadecane 98.3 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/26/2022
Reported: 10/31/2022
Project Name: GRAMA 8817 JV-P-FEDERAL COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/25/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Shalyn Rodriguez

Sample ID: BH 01A 2' (H225033-02)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25		
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90		
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13		
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33		
Total BTEx	<0.300	0.300	10/31/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.2 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 86.9 % 45.3-161

Surrogate: 1-Chlorooctadecane 103 % 46.3-178

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/26/2022
Reported: 10/31/2022
Project Name: GRAMA 8817 JV-P-FEDERAL COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/25/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Shalyn Rodriguez

Sample ID: BH 01B 4' (H225033-03)

BTEX 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25		
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90		
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13		
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33		
Total BTEX	<0.300	0.300	10/31/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 89.0 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 85.5 % 45.3-161

Surrogate: 1-Chlorooctadecane 102 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



CARDINAL
Laboratories

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 31, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: GRAMA 8817 JV-P-FEDERAL COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 10/26/22 14:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/26/2022	Sampling Date:	10/25/2022
Reported:	10/31/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Shalyn Rodriguez
Project Location:	BTA - NM		

Sample ID: BH 02 2' (H225034-01)

BTX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25	
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90	
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13	
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33	
Total BTX	<0.300	0.300	10/31/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.9 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 82.3 % 45.3-161

Surrogate: 1-Chlorooctadecane 99.0 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/26/2022
Reported: 10/31/2022
Project Name: GRAMA 8817 JV-P-FEDERAL COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/25/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Shalyn Rodriguez

Sample ID: BH 02A 4' (H225034-02)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25		
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90		
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13		
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33		
Total BTEx	<0.300	0.300	10/31/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 91.9 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	23.9	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 82.0 % 45.3-161

Surrogate: 1-Chlorooctadecane 102 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/26/2022
Reported: 10/31/2022
Project Name: GRAMA 8817 JV-P-FEDERAL COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/25/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Shalyn Rodriguez

Sample ID: BH 02B 5.5' (H225034-03)

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/31/2022	ND	2.01	100	2.00	7.25		
Toluene*	<0.050	0.050	10/31/2022	ND	2.15	108	2.00	5.90		
Ethylbenzene*	<0.050	0.050	10/31/2022	ND	2.12	106	2.00	5.13		
Total Xylenes*	<0.150	0.150	10/31/2022	ND	6.36	106	6.00	5.33		
Total BTEx	<0.300	0.300	10/31/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 91.9 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/28/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 79.8 % 45.3-161

Surrogate: 1-Chlorooctadecane 95.1 % 46.3-178

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

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A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager



CARDINAL
Laboratories

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 03, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: GRAMA 8817 JV-P-FEDERAL COM #2H

Enclosed are the results of analyses for samples received by the laboratory on 10/26/22 14:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received:	10/26/2022	Sampling Date:	10/25/2022
Reported:	11/03/2022	Sampling Type:	Soil
Project Name:	GRAMA 8817 JV-P-FEDERAL COM #2H	Sampling Condition:	Cool & Intact
Project Number:	03C2012004	Sample Received By:	Shalyn Rodriguez
Project Location:	BTA - NM		

Sample ID: BH 03 1' (H225035-01)

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	11/03/2022	ND	0.471	94.1	0.500	2.37	
Toluene*	<0.025	0.025	11/03/2022	ND	0.475	94.9	0.500	2.01	
Ethylbenzene*	<0.025	0.025	11/03/2022	ND	0.494	98.9	0.500	0.978	
Total Xylenes*	<0.075	0.075	11/03/2022	ND	1.51	101	1.50	1.51	
Total BTEX	<0.150	0.150	11/03/2022	ND					

Surrogate: Dibromofluoromethane 94.6 % 86.7-111

Surrogate: Toluene-d8 97.4 % 89.3-110

Surrogate: 4-Bromofluorobenzene 103 % 88.2-108

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/29/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/29/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/29/2022	ND					

Surrogate: 1-Chlorooctane 83.3 % 45.3-161

Surrogate: 1-Chlorooctadecane 99.2 % 46.3-178

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*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

ENSOLUM
HADLIE GREEN
3122 NATIONAL PARKS HWY
CARLSBAD NM, 88220
Fax To:

Received: 10/26/2022
Reported: 11/03/2022
Project Name: GRAMA 8817 JV-P-FEDERAL COM #2H
Project Number: 03C2012004
Project Location: BTA - NM

Sampling Date: 10/25/2022
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Shalyn Rodriguez

Sample ID: BH 03A 4' (H225035-02)

BTEX 8260B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	10/29/2022	ND	1.86	92.9	2.00	0.962	
Toluene*	<0.025	0.025	10/29/2022	ND	1.82	91.0	2.00	2.50	
Ethylbenzene*	<0.025	0.025	10/29/2022	ND	1.89	94.4	2.00	0.623	
Total Xylenes*	<0.075	0.075	10/29/2022	ND	5.80	96.7	6.00	0.847	
Total BTEX	<0.150	0.150	10/29/2022	ND					

Surrogate: Dibromofluoromethane 97.5 % 83.7-114
Surrogate: Toluene-d8 95.4 % 95.3-107
Surrogate: 4-Bromofluorobenzene 97.4 % 50.9-150

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	10/28/2022	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/29/2022	ND	220	110	200	0.785	
DRO >C10-C28*	<10.0	10.0	10/29/2022	ND	222	111	200	2.84	
EXT DRO >C28-C36	<10.0	10.0	10/29/2022	ND					

Surrogate: 1-Chlorooctane 81.4 % 45.3-161
Surrogate: 1-Chlorooctadecane 97.5 % 46.3-178

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

S-05	The surrogate recovery is outside of lab established statistical control limits but still within method limits. Data is not adversely affected.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

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A handwritten signature in black ink, appearing to read "Mike Snyder", is written over a horizontal line.

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Ensolum, LLC

Project Manager: Hadji Green

Address: 601 N. Marland St. STE 400

City: Midland

Phone #: 432-557-8835

Project #: 03C2012004

Project Name: Green 8817

Project Location:

Sampler Name: Green Whelan

BILL TO

ANALYSIS REQUEST

P.O. #:

Company: BTA Oil

Attn: Bob Hall

Address: 1045 Pecos St

City: Midland

State: TX Zip: 79701

Phone #: 432-312-2203

Fax #:

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

Sample Depth (feet)

HA35035

1 BH03
2 BH03A

1
4

(G)RAB OR (C)OMP.

CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

10:35 10/25/12

10:50 10/25/12

10:50 10/25/12

10:50 10/25/12

10:50 10/25/12

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Reinquinished By:

Curletta

Date: 10/25/12

Time: 1430

Received By:

Hadji Green

Verbal Result: ☐ Yes ☐ No

Add'l Phone #:

All Results are emailed. Please provide Email address:

Remarks:

hgreen@ensolum.com

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Observed Temp. °C

Corrected Temp. °C

Sample Condition

Cool ☒ Intact ☒

CHECKED BY:

(Initials)

Turnaround Time:

Standard ☒ Rush ☐

Thermometer ID #113

Correction Factor -0.5°C

Bacteria (only)

Cool ☐ Intact ☐

Sample Condition

Observed Temp. °C

Corrected Temp. °C

Corrected Temp. °C

† Cardinal cannot accept verbal changes. Please email changes to caley.keene@cardinalabnm.com



APPENDIX E

NMOCD Notifications

OCD Permitting

Home Searches Incidents Incident Details

NOY1704029358 GRAMA 88 17 N-P FEDERAL COM #2H @ 30-025-43426

General Incident Information

Site Name:	GRAMA 88 17 N-P FEDERAL COM #2H		
Well:	[30-025-43426] GRAMA 8817 JV-P FEDERAL COM #002H		
Facility:			
Operator:	[260297] BTA OIL PRODUCERS, LLC		
Status:	Closure Not Approved	Severity:	Minor
Type:	Oil Release	Surface Owner:	State
District:	Hobbs	County:	Lea (25)
Incident Location:	M-16-22S-34E 330 FSL 380 FWL		
Lat/Long:	32.385353,-103.482312 NAD83		
Directions:			

Notes

Source of Referral:	Industry Rep	Action / Escalation:	
Resulted In Fire:	<input type="checkbox"/>	Will or Has Reached Watercourse:	<input type="checkbox"/>
Endangered Public Health:	<input type="checkbox"/>	Property Or Environmental Damage:	<input type="checkbox"/>
Fresh Water Contamination:	<input type="checkbox"/>		

Contact Details

Contact Name:	Contact Title:
---------------	----------------

Event Dates

Date of Discovery:	01/11/2017	OCD Notified of Release:	01/11/2017
Extension Date:	11/15/2018		
Initial C-141 Received:	02/09/2017	Cancelled Date:	
Characterization Report Received:		Characterization Report Approved:	
Remediation Plan Received:		Remediation Plan Approved:	
		Remediation Due:	12/16/2022
Closure Report Received:		Closure Report Approved:	

Compositional Analysis of Vented and/or Flared Natural Gas

No Compositional Analysis Found

Incidents Materials

Cause	Source	Material	Volume				Units
			Unk.	Released	Recovered	Lost	
Equipment Failure	Separator	Crude Oil	<input type="checkbox"/>	5	0	5	BBL

Quic

- [Gene](#)
- [Mater](#)
- [Eveni](#)
- [Order](#)

Assc

- [Incide](#)
- [Well I](#)

New

- [New I](#)
- [New I](#)
- [New I](#)
- [New I](#)
- [New I](#)
- [New I](#)
- [New I](#)

09/15/2022	1RP-4590 has been closed. Please refer to incident #NOY1704029358 for all future correspondence.	
09/15/2022	The C-141 closure report submitted on 11/10/2021 states "The release is located on top of a historical pit area. Remediation activities will be addressed at time of pit reclamation." If the pit has been reclaimed please provide a closure report including information regarding the remediation of the release. If the pit has not been reclaimed and a deferral request needs to be submitted, page 5 of the C-141 must be completed. A deferral will only be approved if all conditions are met per 19.15.29 NMAC.	
09/15/2022	Please submit a revised closure report or deferral request though the OCD permitting portal by 12/16/2022.	
09/15/2022	Please include a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.	
09/15/2022	An application [61120] was submitted to OCD for review. It was submitted, indicating that it was an: [C-141] Application for administrative approval of a release notification and corrective action The operator was emailed confirmation of this event.	
11/10/2021	The (09/15/2022, C-141) application [61120] was assigned to this incident.	
02/09/2017	1RP-4590. Lost supply to separator. Mist over pasture. Location is south of battery, SE of well. Lat/long: 32. 385229, -103. 48183.	

Orders

1RP-4590-0



Applicant: [49915] BTA OIL PROD & SUN OPER LTD PART
Contact:
Reviewer: Olivia Yu

Approved By:
Issuing Office: Hobbs

Processing Dates

Received: 01/23/2017
Approved: 02/09/2017
Expiration:

Ordered: 02/09/2017
Denied:
Cancelled:

From: Bob Hall <BHall@btaoil.com>
Sent: Thursday, September 15, 2022 3:09 PM
To: Bob Hall
Subject: FW: The Oil Conservation Division (OCD) has rejected the application, Application ID: 61120

From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Thursday, September 15, 2022 10:26 AM
To: Bob Hall <BHall@btaoil.com>
Subject: The Oil Conservation Division (OCD) has rejected the application, Application ID: 61120

***** EXTERNAL EMAIL - Please use caution and **DO NOT** open attachments or click links from unknown or unexpected emails. *****

To whom it may concern (c/o Bob Hall for BTA OIL PRODUCERS, LLC),

The OCD has rejected the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nOY1704029358, for the following reasons:

- Please include a scaled diagram that shows the potentially impacted area, significant surface features including roads and site infrastructure, location of borings, sample points, monitoring wells and subsurface features such as known pipelines to the extent known at the time of submittal including the source of information regarding subsurface features.
- The C-141 closure report submitted on 11/10/2021 states "The release is located on top of a historical pit area. Remediation activities will be addressed at time of pit reclamation." If the pit has been reclaimed please provide a closure report including information regarding the remediation of the release. If the pit has not been reclaimed and a deferral request needs to be submitted, page 5 of the C-141 must be completed. A deferral will only be approved if all conditions are met per 19.15.29 NMAC.
- Please submit a revised closure report or deferral request through the OCD permitting portal by 12/16/2022.
- 1RP-4590 has been closed. Please refer to incident #NOY1704029358 for all future correspondence.

The rejected C-141 can be found in the OCD Online: Permitting - Action Status, under the Application ID: 61120. Please review and make the required correction(s) prior to resubmitting.

If you have any questions why this application was rejected or believe it was rejected in error, please contact me prior to submitting an additional C-141.

Thank you,
Brittany Hall
Environmental Specialist - A

505-334-6178

Brittany.Hall@state.nm.us

New Mexico Energy, Minerals and Natural Resources Department

1220 South St. Francis Drive

Santa Fe, NM 87505



APPENDIX F

Final C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-1
Revised March 17, 1

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on the back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	BTA Oil Producers LLC	Contact	Pam Inskeep
Address	104 S. Pecos, Midland, TX 79701	Telephone No.	(432) 682-3753
Facility Name	Gramma 8817 JV-P Federal Com #2H 30-025-43426 32.385229, -103.481830	Facility Type	O/G battery

Surface Owner	State of NM	Mineral Owner		Lease No.	NMNM82799
---------------	-------------	---------------	--	-----------	-----------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	16	22S	34E	330	South	380	West	Lea

NATURE OF RELEASE

Type of Release	Minor	Volume of Release	5 BO	Volume Recovered	0
Source of Release	release from separator	Date and Hour of Occurrence	4:50 pm 1/11/2017	Date and Hour of Discovery	4:50 pm 1/11/2017
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Olivia Yu - NMOCD Carlsbad BLM, Shelly Tucker		
By Whom?	Pam Inskeep	Date and Hour	5:30 pm 1/11/2017		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			
If a Watercourse was Impacted, Describe Fully.* N/A					

RECEIVED

By Olivia Yu at 7:58 am, Feb 09, 2017

Describe Cause of Problem and Remedial Action Taken.*

Lost supply to the separator, released fine mist of oil from top of separator. Some of the mist drifted to the pasture directly adjacent to the battery.


Will wash and clean with heated water, detergent, and possible bio agent. Will remove any affected soil and dispose of at an approved waste facility.

Describe Area Affected and Cleanup Action Taken.*

See above explanation

GPS coordinates ~50 m SE
of well; ~60 m S of battery.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Pam Inskeep	Approved by District Supervisor: 		
Title: Regulatory Administrator	Approval Date: 2/9/2017	Expiration Date:	
Date: 01/13/2017 Phone: (432) 682-3753	Conditions of Approval:	Attached <input checked="" type="checkbox"/>	

* Attach Additional Sheets If Necessary

see attached directive

1RP-4590

nOY1704029358

pOY1704029518

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 1/23/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1R-4590 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 3/9/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold

OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Incident ID	nOY1704029358
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>>100</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Bob Hall Title: Environmental ManagerSignature:  Date: 2/14/2023email: bhall@btaoil.com Telephone: 432-682-3753**OCD Only**Received by: Jocelyn Harimon Date: 02/14/2023

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Oil Conservation Division

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Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Bob Hall Title: Environmental Manager
Signature: B. Hall Date: 2/14/2023
email: bhall@btaoil.com Telephone: 432-682-3753

OCD Only

Received by: Jocelyn Harimon Date: 02/14/2023

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Brittany Hall Date: 2/20/2023
Printed Name: Brittany Hall Title: Environmental Specialist

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 186250

CONDITIONS

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 186250
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bhall	None	2/20/2023